

Abstract of Disclosure

Arrangements, specific apparatus and associated methods for skin depth compensation in underground boring applications are described. Compensation for skin depth error is accomplished by measuring a locating signal transmitted from a boring tool such that measurements of the locating signal include skin depth error introduced as a result of the electrical conductivity characteristic of the earth. Thereafter, the measurements are used in a way which determines a skin depth corrected position of the boring tool. In one aspect, a multi-frequency approach is provided which utilizes measured intensities of the locating field at two or more frequencies to extrapolate a zero frequency value of intensity. The zero frequency value of intensity is then used in position determination. The multi-frequency approach does not require knowledge of earth properties or ground surface geometry since components of the measured magnetic field intensities of the locating field measured at nonzero frequencies contain property and geometry effects and pass them on to extrapolated zero frequency values. Skin depth compensation in a number of locating scenarios using a single frequency locating signal is introduced.